# PAST Fusion Cell Study of Emergency Communication During Hurricane Harvey Finds Social Media in the "Eye of the Storm"

**Summary**

A federal agency requested that Argonne National Laboratory facilitate the monitoring of social media platforms in support of the agency's response to Hurricane Harvey, beginning August 25, 2017, as the hurricane bore down on the southeast coastal region of Texas, and continuing through September 1st. Staff from the Public Affairs Science & Technology (PAST) Fusion Cell actively monitored social media platforms, primarily Facebook and Twitter, for activity relating to the storm. The monitoring effort focused on the official social media sites for county/parish and city offices of emergency management, homeland security and law enforcement agencies along the coast of Texas and Louisiana. The federal agency's primary interest was the dissemination of evacuation or other protective action information via social media as Hurricane Harvey approached and made landfall.

PAST staff monitored evacuation messaging in more than 40 counties/parishes and three municipalities in Texas and Louisiana. Between August 24 and September 1, more than two dozen Texas counties and several Louisiana parishes issued either voluntary or mandatory evacuation notices via social media. PAST staff compiled data from those affected jurisdictions, examining whether evacuation orders were issued, whether they were mandatory or voluntary, and identifying the precise times of the social media posts. Staff compiled additional information on shelter-in-place orders and which specific social media platforms were used. This data was formulated into two maps highlighting the jurisdictions' use of social media to communicate protective action information.

The first map (Figure 1, below) displayed which counties/parishes actively used social media to communicate with the public about evacuation requirements relating to Hurricane Harvey's initial approach to the Texas coast on August 25. The data also showed which jurisdictions posted protective action information after initial landfall, as Hurricane Harvey circled back out into the Gulf and returned for a second landfall on August 27. The second landfall brought more rain than wind, and evacuation orders reflected efforts to move residents from impacted areas.

The second map (Figure 2, below) focused specifically on which social media platforms the jurisdictions used. Of the 40-plus counties, parishes and municipalities monitored, 24 used Facebook exclusively, while one solely used Twitter. Eleven counties used both Facebook and Twitter in tandem, though most of the jurisdictions in this category did not differentiate between the two platforms, posting the exact same messages to each. It should be noted that 28 counties/parishes initially identified for monitoring did not use either social media platform.

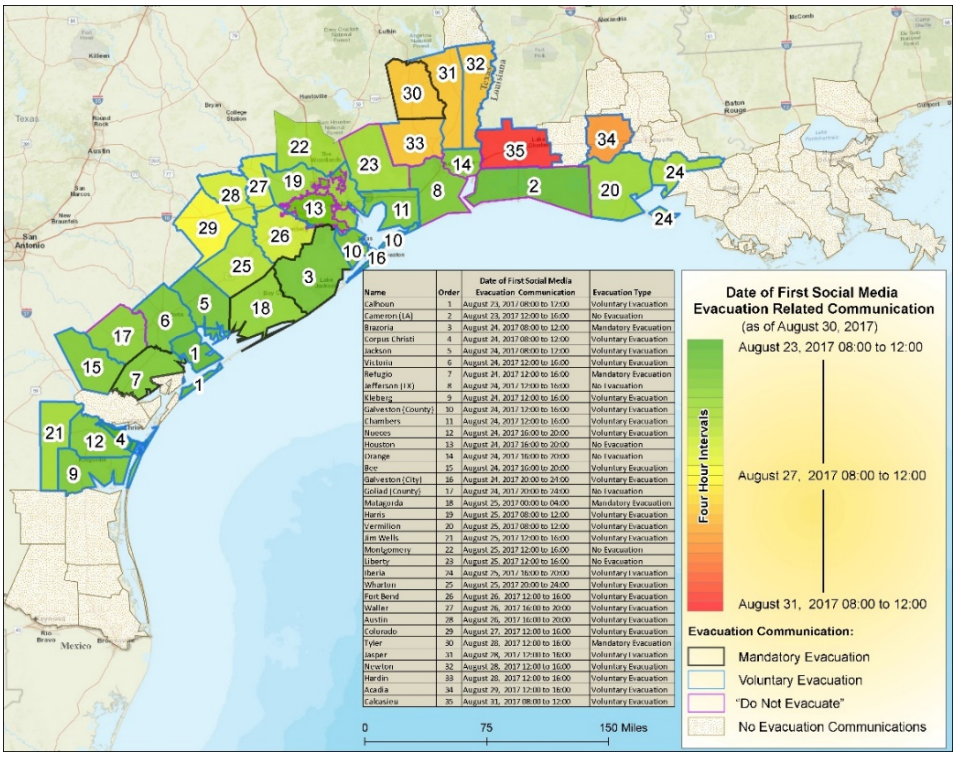


*Figure 1. Use of social media to issue protective actions.*

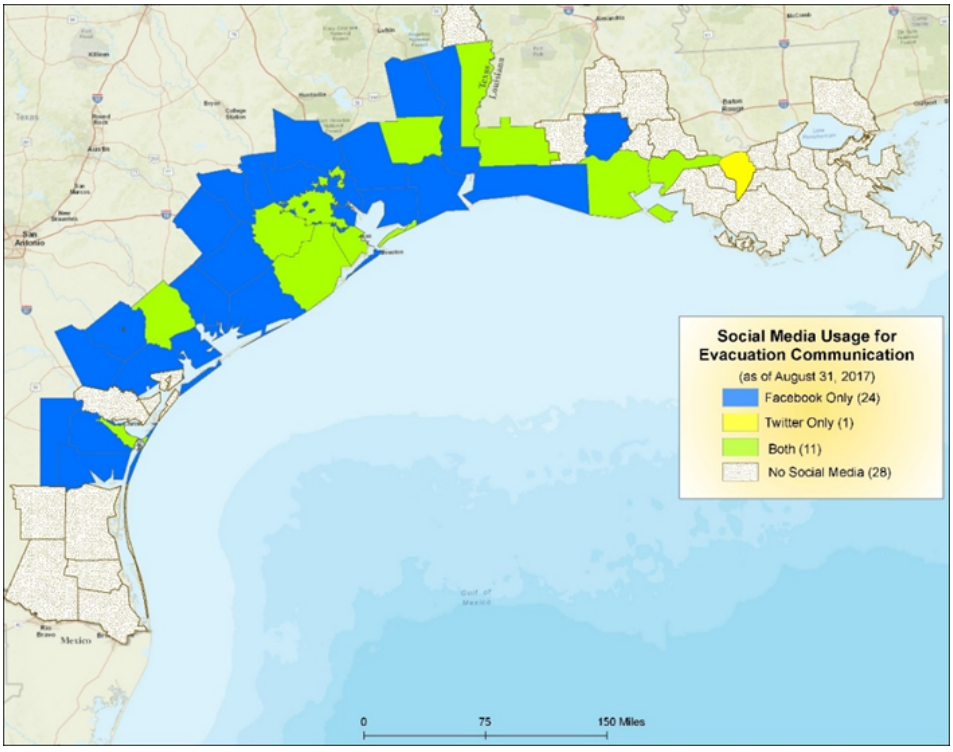


*Figure 2. Use of Facebook and Twitter by affected jurisdictions.*

The monitored counties and municipalities executed social media campaigns with varying degrees of efficacy. Calhoun, Harris and Nueces counties in Texas had the most widespread use of social media. These counties are home to several large towns and cities, including the major population center of Houston. Public safety and emergency management agencies from these jurisdictions posted hundreds of storm-related social media messages. They also monitored public and media posts and responded to specific queries as appropriate. In counties where municipalities also maintained separate social media platforms, in only one instance, between the City of Corpus Christi and Corpus Christi County, was their evidence of coordination between the two.

Many jurisdictions effectively used live video streaming to communicate news conferences and other information. Most jurisdictions employed maps and photographic elements to support messaging – a well-established means to increase public engagement. The jurisdictions also shared posts from other agencies that had expertise in related fields, helping to amplify official messaging. In particular, maps on the storm's track from the National Weather Service were frequently reposted. These posts were used in conjunction with local area storm updates and evacuation notices. Many queries from residents were generated from these posts, with most wanting more information about the storm's direction. Figure 3, below, shows two examples of the effective use of graphic elements to support evacuation messaging.

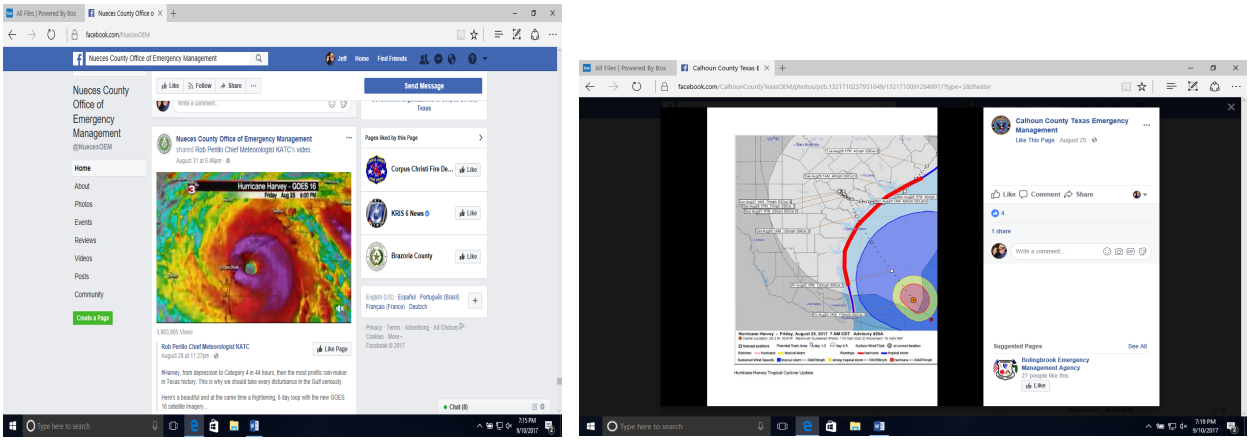


*Figure 3. Hurricane Harvey weather posts using informational graphics.*

Jurisdictions frequently provided links to interactive maps showing evacuation zones. By clicking on the link, residents could enter their addresses and determine whether they were living in an area subject to an evacuation order. While this technology is useful and shows promise, the maps also garnered the most critical response from the public. Many residents complained that the information on the maps was not sufficiently clear, leading to numerous follow-up queries asking for further guidance. It is recommended that agencies periodically review the functionality of their interactive maps to ensure ease of access and information clarity, particularly for targeted audiences who lack computer-based problem-solving skills.

While many agencies have acknowledged the usefulness of social media in logistical aspects of emergency response – such as allocation of resources – during Hurricane Harvey

emergency officials consistently discouraged residents from trying to reach responders via social media. The U.S. Coast Guard, for example, asked residents not to use social media to request help during the flooding, saying that social media channels were not being monitored and that emergency telephone calls would allow for a more timely response. Similar messages were communicated on several agency pages. Numerous residents complained, however, that call center lines were always busy. Social media comments indicated that many rescues from floodwaters were initiated after an agency, or in some cases a volunteer, saw a post on Facebook or Twitter. It is recommended that public safety agencies examine ways in which social media can be leveraged to alleviate backlogs occurring in major call centers during an emergency.

Hurricane Harvey arrived in Texas during an interesting period in American history in which "fake news" has taken center stage in the political discourse. As such, it was not surprising that almost every official city or county social media site cautioned residents against following "fake news" or erroneous posts from residents who may have shared, purposefully or otherwise, inaccurate information. Social media studies show that government agencies benefit when the public relies on them as the official source of information in a crisis. During the Hurricane Harvey response, many agencies worked to establish themselves as the sole source of official storm-related emergency public information. The jurisdictions that took the time to post notices on Facebook and Twitter encouraging residents to rely only on them for official information received dozens of positive responses from grateful residents. This should be encouraged by all public safety agencies as a best practice.

The crisis communication team also took a "deep dive" into the use of social media by Fort Bend County, Texas, which was one of the hardest-hit areas in the state. The Fort Bend County Office of Emergency Management used both Facebook and Twitter to issue numerous storm-related messages, including protective action orders for both the August 25 and August 27 Harvey landfalls. The social media activity of Fort Bend County provided key data and case study examples of the effective use of social media during a crisis. The summary of the Fort Bend, Texas, findings is contained in a separate document.

The following is a recap of key observations and recommendations from monitoring the social media response to Hurricane Harvey:

- **Use of interactive floodplain maps:** Numerous agencies used interactive floodplain maps that allowed residents to determine whether they resided in an area where an evacuation had been ordered or recommended. (See Figure 4, below.) These maps generated the most comments from residents, with many expressing concern about their accuracy. It is recommended that agencies re-examine the data included in the maps and improve their functionality to eliminate discrepancies.

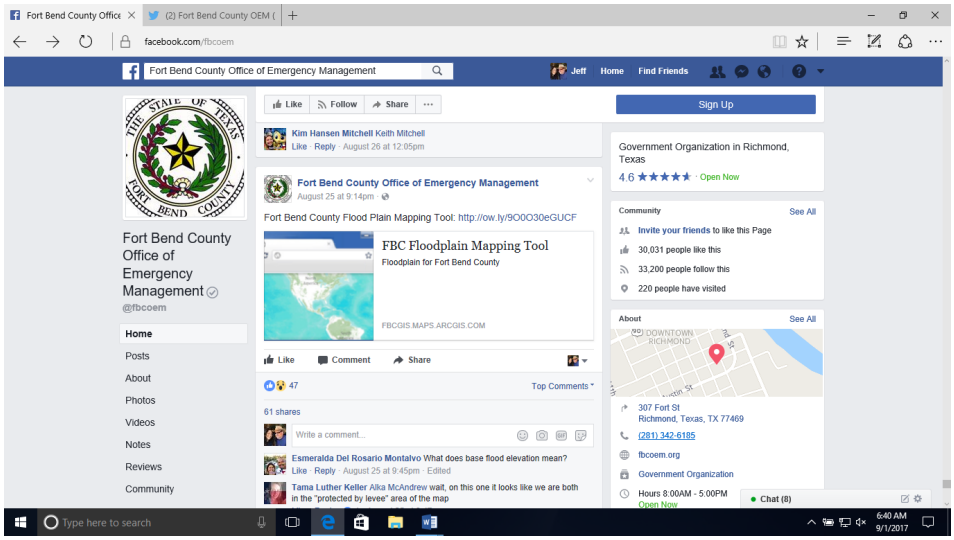


*Figure 4. Fort Bend County interactive floodplain mapping tool.*

- **Agencies discourage use of social media for emergency response:** The U.S. Coast Guard was among a few agencies that discouraged residents from reporting flooding or requesting rescue on social media. (See Figure 5, below.) The USCG indicated that it was not monitoring social media, and that response time would be hindered without a call to 911. Residents complained, however, that call centers were always busy and that they were unable to get through. Social media was often the only means for communicating distress, and the crisis communication team found several examples where rescues were facilitated by social media, after responders (agency affiliated and volunteer) saw reports on Facebook or Twitter. It is recommended that public safety agencies examine ways in which social media can be leveraged to alleviate backlogs occurring in major call centers during an emergency.


*Figure 5. U.S. Coast Guard advising residents in need of rescue not to use social media.*

- **Understanding messaging on different social media platforms:** While all of the jurisdictions monitored had a social media presence during the Hurricane Harvey response, the majority were active on only one platform, with most electing to use Facebook over Twitter. Of those who did use both Facebook and Twitter, few did so effectively, with most opting to post the same messages on both platforms or to simply link between the two. Brazoria County, Texas, was one jurisdiction that demonstrated a well-conceived strategy designed to maximize the value of each platform for its intended audience. The demographic for Facebook typically skews older, with messages that are more visual and informative. The Twitter demographic is typically younger, with shorter and more concise messages. Figure 6 below shows an illustrative Pearland ISD weather update on Facebook in comparison to a brief Twitter message announcing that a local credit union would open for storm relief. Brazoria County used Facebook to display video, maps and graphics on storm progress and evacuation information, while using Twitter for "quick hit" announcements regarding beach closures, jail inmate evacuations and the availability of hurricane supplies. It is recommended that agencies develop a strategy that recognizes the different audiences and the different messaging needs for Facebook and Twitter (and any other pertinent social media platforms), with the goal of maximizing the relative value of each.

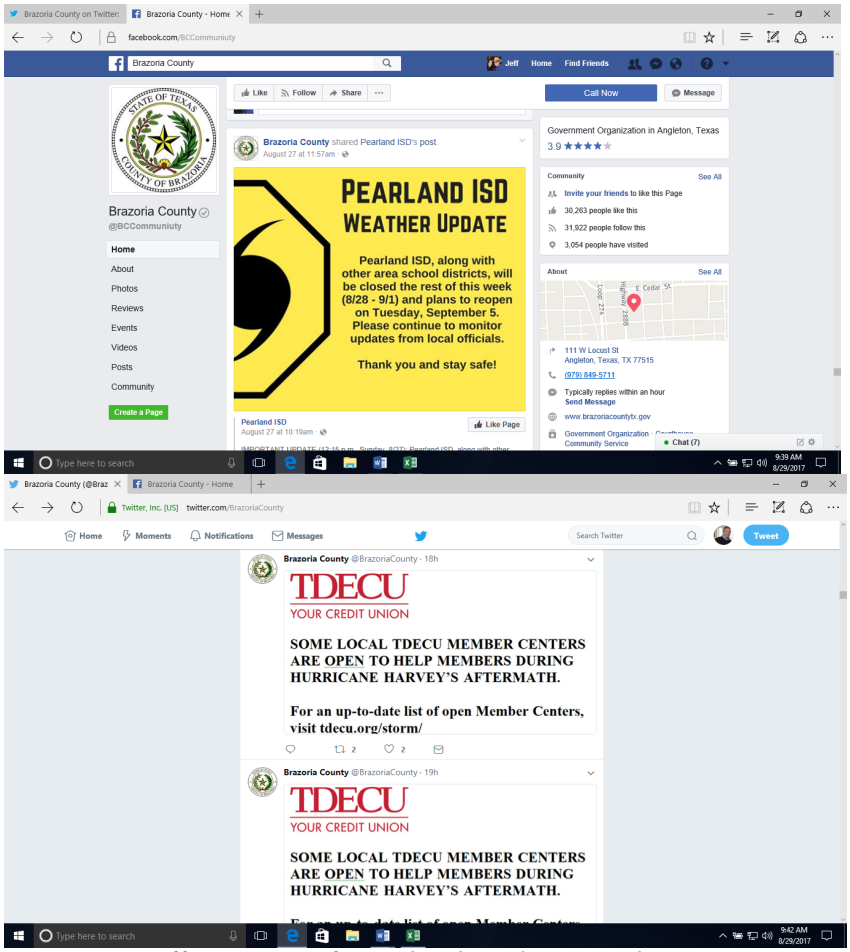


*Figure 6. Differing use of Facebook and Twitter by Brazoria County, Texas.*

- **Establishing agency as the "official" information source:** Several responding jurisdictions posted that individuals claiming to work for an official agency were spreading rumors and misinformation. In some cases, the agencies posted actual examples of rumors and labeled them as "fake news" or "false." (See Figure 7, below.) These agencies effectively re-asserted themselves as the source for official emergency information; residents, in turn, expressed gratitude that clarification had been offered. It is recommend that examples from Hurricane Harvey be used as a best practice to encourage agencies to answer queries, address rumors and misinformation, and maintain continuity in their social media response.

*Figure 7. Example of agency labeling a social media post as "false."*